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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,436	08/30/2006	Young-Joo Oh	B1180/20057	5030

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EXAMINER	
LOFFREDO, JUSTIN E	
ART UNIT	**PAPER NUMBER**
3744	

NOTIFICATION DATE	DELIVERY MODE
05/22/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents@crbcp.com

Office Action Summary	Application No.	Applicant(s)	
	10/598,436	OH ET AL.	
	Examiner	Art Unit	
	JUSTIN LOFFREDO	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 March 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21,24-38 and 40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21,24-38 and 40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 25, 2009 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. **Claims 21, 35 and 40** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rode (US Patent No. 6,044,648) in view of Roslonski (US Patent No. 3,595,030).

Consider claim 21. Rode discloses cooling equipment (40) for cooling a cooled material, said cooling equipment comprising: a cooling space (50) capable of receiving the cooled material; inner walls (52) and (54) limiting the cooling space (50); an outer wall (see Figure 3 below); plenums (56), (58) and (60), which make up the claimed intermediate space between the outer wall and the inner walls (52) and (54); and a perforated tube (66) (corresponding to the claimed cooling agent supply line) for introducing a cooling agent, whereby most of the liquid cooling agent (i.e. not all of the liquid cooling agent is vaporized, and thus, some of the liquid cooling agent is introduced in the intermediate space (see col. 1, L 59-col.2, L 7)), wherein the cooling agent supply line (66) empties into the intermediate space between the inner walls (52) and (54) and the outer wall, and continuously transfer the cooling agent into the cooling space (col. 3, L 10-48; Fig. 3).

Rode fails to disclose a porous buffer material arranged in the intermediate space; the cooling agent supply line introducing the cooling agent into the porous buffer material of the intermediate space, the porous buffer material being adapted to temporarily receive the cooling agent; the cooling agent being transferred through the inner wall with the inner wall being permeable; or the ability of the cooling equipment to function without a cooling agent lake forming on a bottom of the cooling space.

Roslonski teaches a porous buffer material (34) arranged in an outer compartment (32) (corresponding to the claimed intermediate space), the porous buffer material (34) being adapted to be capable of temporarily receiving the cooling agent, and an inner wall (20) having holes (36) (corresponding to the claim that the inner wall is permeable) (col. 2, L 24-71; Fig. 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the cooling equipment disclosed by Rode to incorporate the porous buffer material arranged in the intermediate space and the inner wall being permeable as taught by Roslonski so that the cooling agent supply line introduces the cooling agent into the porous buffer material to then transfer the cooling agent through the inner wall in order to effectively insulate and maintain a reduced temperature in the cooling space while distributing the cooling agent to pass through the permeable inner wall into the cooling space. Furthermore, the presence of the porous buffer material would capture liquid refrigerant flowing through the intermediate space not vaporized in the cooling agent supply line, thereby preventing the formation of a cooling agent lake at the bottom of the cooling space. Additionally, while it does appear that a cooling agent lake could form within plenum (60) around the

coil (68), claim 21 recites that "no cooling agent lake forms *on a bottom of the cooling space*" (lines 13-14). The opening provided at the bottom of the cooling space of the apparatus disclosed by Rode would prevent the formation of a cooling agent lake at the bottom of the cooling space as recited in the claim (see Rode, Figure 3 below).

Consider claim 35. Rode teaches a pressure relief valve (80) and aperture (82) (corresponding to the claimed cold gas outlet) via which cooling agent and cold gas can escape from the cooling space (50) being arranged on an upper side of the cooling space (50) (Col. 3, L 5-7 & 36-40; Figure 3).

Consider claim 40. Rode teaches a cooling agent such as liquid nitrogen (Col. 3, L 2-3).

6. **Claims 25 and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rode (US Patent No. 6,044,648) and Roslonski (US Patent No. 3,595,030) as applied to claim 21, and further in view of Barthel (US Patent No. 4,481,779).

Consider claims 25 and 26. Rode and Roslonski disclose the claimed invention but fail to disclose the inner wall being made of a thermally conductive material, which further consists essentially of metal.

Barthel teaches that the inner wall (28) can be made of any material composition, e.g. metal or plastic (col. 5, L 26-27), metal being a thermally conductive material.

It would have been obvious to one or ordinary skill in the art at the time of the invention to modify the cooling device disclosed by Rode and Roslonski with the

thermally conductive inner wall taught by Barthel in order to provide a thermally conductive material effective for cooling, whereby metal is a material that will retain its form after being repeatedly subjected to cold shocks at liquid nitrogen temperatures.

7. **Claims 27 and 28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rode (US Patent No. 6,044,648) and Roslonski (US Patent No. 3,595,030) as applied to claim 21, and further in view of Palma (US Patent No. 3,618,336).

Consider claims 27 and 28. Rode and Roslonski disclose the claimed invention but fail to disclose the cooling space being vat shaped where the cooling agent supply line has a cooling agent distributor along the upper circumferential edge to introduce a cooling agent into the intermediate space in a distributed manner over the length of the cooling agent distributor.

Palma teaches a cooled coffin structure where the wall of the coffin is hollow and passages are provided which are cooling agent distributors communicating with the interior of the hollow wall and the interior of the coffin, which is the cooling space, and means such as a blower or fan are provided outside of the coffin to continuously circulate air which is a cooling agent through the hollow walls so that a stream of cooling agent flows into the intermediate space and then into the cooling (col. 1, L 46-55; col. 2, L 13-15). A channel (20) that is a cooling agent supply line extends circumferentially along the internal sides of the wall portion (14) (col. 1, L 46-55; Col. 2, L 13-15).

It would have been obvious to one or ordinary skill in the art at the time of the invention to modify the cooling device disclosed by Rode and Roslonski to incorporate

the cooling distribution arrangement taught by Palma in order to uniformly distribute the cooling agent throughout the entire cooling space.

8. **Claims 24, 29 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rode (US Patent No. 6,044,648) and Roslonski (US Patent No. 3,595,030) as applied to claim 21, and further in view of Binder (US Patent No. 5,601,143).

Consider claim 24. Rode and Roslonski disclose the invention as claimed, but fail to disclose the inner wall being substantially grid shaped.

Binder teaches inner walls (18) of a limiting a space (10), the inner walls (18) having a plurality of apertures (38) (corresponding to the inner wall being substantially grid shaped). The apertures are clearly positioned on a network of substantially uniformly spaced horizontal and perpendicular lines (see Figure 4), which renders the wall substantially grid shaped (col. 3, L55-60; Figure 4). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the inner wall of the cooling device disclosed by Rode and Roslonski to be substantially grid shaped as taught by Binder in order to produce a connection between the cooling space and the inner wall that allows refrigerant to flow into the cooling space in a uniform manner.

Consider claims 29 and 30. Rode and Roslonski disclose the claimed invention but fail to disclose a heating element being arranged in the cooling space; or that the heating element is arranged under a heating plate, the heating plate having several perforations that make a circulation of gas possible.

Binder teaches a heating element (44) being arranged in a cooling space; the heating element (44) being arranged under the base (12) and behind side walls (18), which make up a heating plate, the heating plate having several apertures (38) (i.e. perforations) that make a circulation of gas possible (col. 3, L 30-60; col. 4, L 11-14, 49-56; Fig. 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the cooling device disclosed by Rode and Roslonski with the heat element arrangement taught by Binder in order to control the temperature of the circulating air in the cooling space.

9. **Claims 31-34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rode (US Patent No. 6,044,648) and Roslonski (US Patent No. 3,595,030) as applied to claim 21, and further in view of Walker et al. (US Patent No. 5,976,871).

Consider claims 31-33. Rode and Roslonski disclose the claimed invention but fail to disclose a removable protective bell on the cooling space that is at least partially transparent and has a sample lock.

Walker et al. teaches a protective enclosure (23) (corresponding to the claimed protective bell), that is capable of being removed and has a transparent door (33) and a drying cavity (31) in the enclosure (corresponding to the claimed sample lock) separated from the outside environment (col. 5, L 15-17, 25 & 27; Fig. 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the cooling device disclosed by Rode and Roslonski to include the

protective bell arrangement taught by Walker et al. in order to protect the biological samples and allow them to be arranged or prepared in situ without contact with the outside environment.

Consider claim 34. Roslonski discloses conduits (48) (corresponding to the claimed cold gas outlet) on the bottom of enclosure (30) through which cooling agent and cold gas that has come from cooling space (22) can escape. In this instance the enclosures (20) and (30) and the removable cover (24) form a covering (corresponding to the claimed protective bell) on an inner compartment (22) (corresponding to the claimed cooling space) (col. 2, L 47, 53; col. 3, L 13-15; Fig. 2).

10. **Claim 36 and 38** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rode (US Patent No. 6,044,648) and Roslonski (US Patent No. 3,595,030) as applied to claim 21, and further in view of Weng (US Patent No. 6,845,628).

Consider claim 36. Rode and Roslonski disclose the claimed invention but fail to disclose a temperature sensor in the cooling space capable of measuring a temperature in the cooling space; a controllable cooling agent valve capable of adjusting an amount of cooling agent supplied; or a temperature control device capable of regulating the temperature in the cooling space, the temperature control device being connected on an input to the temperature sensor and on an output side to the cooling agent valve.

Weng teaches a temperature control device with a temperature sensor that senses temperature at a specified location within a refrigeration apparatus. The temperature control device has a first flow valve (corresponding to the claimed cooling

agent valve) that can selectively increase or decrease the flow of refrigerant in response to temperature sensed by the sensor. The temperature sensor also contains a controller (corresponding to the claimed temperature control device) that is capable of controlling the valve in response to temperature sensed (col. 2, L 2-14).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the cooling device with a cooling space disclosed by Rode and Roslonski to incorporate the temperature controlling arrangement and temperature sensor as taught by Weng in order to monitor and provide reliable control for the temperature within the cooling space of the device by providing the sensor within the cooling space so that the temperature is appropriate for cooling products.

Consider claim 38. Weng discloses the temperature sensor sensing temperature at a specified location within the refrigeration apparatus (i.e. in the cooling space as discussed in the rejection of claim 36) capable of measuring a temperature of a cryosample in the cooling space (col. 2, L 2-14).

11. **Claim 37** is rejected under 35 U.S.C. 103(a) as being unpatentable over Rode (US Patent No. 6,044,648), Roslonski (US Patent No. 3,595,030) and Weng (US Patent No. 6,845,628) as applied to claim 36, and further in view of Ali (US Patent No. 5,546,756).

Consider claim 37. Rode, Roslonski and Weng disclose the claimed invention but fail to disclose the temperature control device connected via a pulse generator to the

cooling agent valve, where the pulse generator is capable of alternatively opens and closes the cooling agent valve.

Ali discloses a controller (1) (corresponding to the claimed temperature control device) including, i.e. connected via, a pulse generator to valve (6) (corresponding to the claimed cooling agent valve), where the pulse generator is capable of alternatively opening and closing the cooling agent valve (6) via a pulse width control signal (col. 2, L 61-61; col. 3, L 4-10, 37-40; Fig. 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the cooling device disclosed by Rode, Roslonski and Weng to include the controller and valve arrangement taught by Ali in order to control cooling within the cooling space by controlling the amount of cooling agent that flows through the valve and into the cooling space.

12. There are numerous examples of functional language recited in apparatus claims 21, 24-38 and 40 such as: "a cooling space *for receiving the cooled material*" (claim 21, line 3); "the inner wall is permeable *for the cooling agent*" (claim 21, line 13); and "a cold gas outlet *via which cooling agent and cold gas can escape from the cooling space*" (claim 35, lines 1-2) . Applicant should note that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. Since the prior art structure in the instant case is capable of performing the intended use, it meets the claim.

Rode – Figure 3

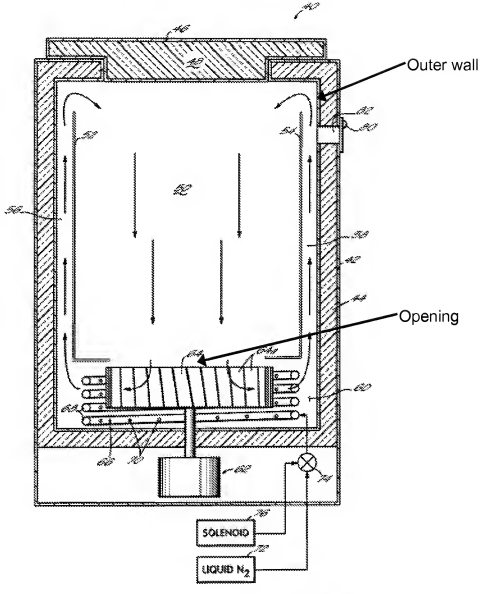
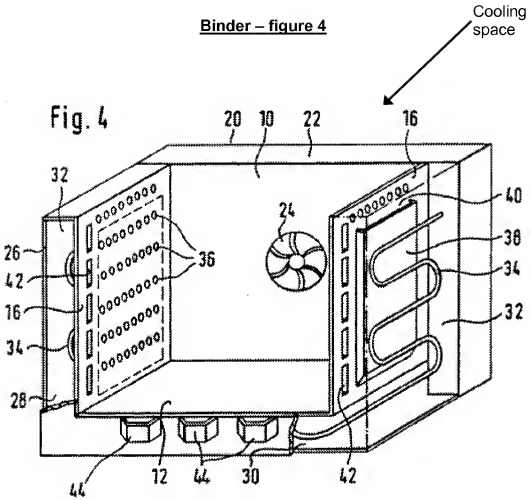


FIG. 3

Binder – figure 4



Response to Arguments

13. Applicant's arguments (see page 5, "Indefiniteness Rejection of Claim 24", filed March 25, 2009) with respect to the rejection(s) of claim(s) 24 under 35 U.S.C. § 112, second paragraph, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of an interpretation of a previously cited reference.

14. Applicant's arguments (see pages 7-8, "Roslonski Teaches Wrong Cooling Agent Flowing the Wrong Way), with respect to the rejection(s) of claim(s) 21, 24, 35 and 40 under 35 U.S.C. § 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of a different interpretation and modification of the previously applied reference.

15. Applicant's arguments (see pages 7-8) with respect to the rejection(s) of claim(s) 21 and 24-40 under 35 U.S.C. § 103(a) have been fully considered but they are not persuasive.

In response to applicant's argument (pages 7 and 8) that Rode (see page 7) or the proposed combination of reference teachings (see page 8) does not disclose or suggest the introduction of the cooling agent in liquid form into the porous buffer material of the intermediate space, Rode discloses that *most,* but not all of the liquid refrigerant inside the coil (corresponding to the claimed cooling agent supply line) is vaporized (col. 1, L 59-62). Therefore, Rode acknowledges that some of the cooling agent in liquid form is introduced into the intermediate space. Furthermore, in response

to applicant's arguments against the Rode reference individually that Rode fails to disclose a porous buffer material in the intermediate space, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the instant case, while Rode does not disclose a porous buffer material in the intermediate space, Roslonski teaches a porous buffer material (34) arranged in an outer compartment (32) (corresponding to the claimed intermediate space) (Roslonski, Fig. 2).

In response to applicant's arguments (pages 7-8) against the Roslonski reference individually that Roslonski does not use a liquid cooling agent, but rather uses a gaseous refrigerant, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the instant case, while Roslonski does not disclose using a liquid cooling agent, Rode teaches that a cooling agent is introduced, whereby most of the liquid cooling agent (i.e. not all of the liquid cooling agent is vaporized, and thus, some of the liquid cooling agent is introduced in the intermediate space (see col. 1, L 59-col.2, L 7)).

In response to applicant's argument (page 8) that a person having ordinary skill in the art would not have been motivated to incorporate the porous buffer material disclosed by Roslonski in the intermediate space of Rode with a reasonable expectation of success, the Examiner respectfully disagrees. The porous buffer material disclosed

by Roslonski is capable of allowing the gaseous refrigerant to pass through (see Roslonski, ABST; col. 2, L 33-72). A person having ordinary skill in the art would have known that the Roslonski porous buffer material could be incorporated into the Rode intermediate space. Roslonski teaches that since doing the buffer material is porous, the flow of gaseous cooling agent would not be blocked and the buffer would effectively insulate and maintain a reduced temperature in the cooling space while distributing the cooling agent to pass through the permeable inner wall into the cooling space.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUSTIN LOFFREDO whose telephone number is (571) 270-7114. The examiner can normally be reached on M - F 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler &. Frantz Jules can be reached on (571) 272-4834 & (571) 272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cheryl J. Tyler/
Supervisory Patent Examiner, Art Unit 3744

/Justin Loffredo/
May 18, 2009